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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/517,539	03/02/2000	Simon Robert Walmsley	AUTH01US	4602

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EXAMINER
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NGUYEN, NGA B

ART UNIT	PAPER NUMBER
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3628

DATE MAILED: 04/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/517,539

Applicant(s)

WALMSLEY ET AL.

Examiner

Nga B. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 04 February 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. This Office Action is the answer to the Amendment filed on February 4, 2004, which paper has been placed of record in the file.
2. Claims 1-12 are pending in this application.

### ***Response to Arguments/Amendment***

3. Applicant's arguments with respect to claims 1-12 have been considered but are not persuasive. In the arguments regarding to claim 1, applicant stated that Abraham (US 4,799,061) does not disclose application of a one-way function at both a trusted chip and an untrusted chip and the outcomes of which are compared. Examiner respectfully disagrees. See Abraham, column 3, lines 9-35, a random number is generated and applying DES encryption algorithm (one-way function) to encrypt the random number using the key K1 to produce the value X at the terminal (trusted chip), applying DES encryption algorithm to decrypt the random number using the key K2 to produce the value Y at the card (untrusted chip), thus the DES encryption algorithm (one-way function) is applied at both the terminal and the card. Also, see column 3, lines 25-45, the card encrypts its secret key K2 to produce a value Z, the terminal encrypts its secret key K1 to produce a value B, the value Z and B are compared to determine a match considering the card to be valid. Moreover, applicant stated that the Abraham's method is not the method claimed in the present application, but applicant did not show the differences between the steps claimed in the claim with the steps performing in the Abraham's method. Abraham meets all the steps claimed in the claim

as addressed by examiner in the previous office action. Therefore, there is no distinguishes between the method claimed in the present invention with the Abraham's method. Moreover, applicant did not file a terminal disclaimer in compliance with 37 CFR 1.321(c), thus the provisional double patenting rejection is maintained.

In conclusion, for the reasons stated above, examiner decides to maintain the rejections described in the previous office action (also see details below) and make this action FINAL.

4. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

### ***Double Patenting***

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent

and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b). Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claim 1 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 09/517,384. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 1 of copending Application No. 09/517,384 discloses the validation protocol for determining whether an untrusted authentication chip is valid using an asymmetric encryption function (a one-way function).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

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7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-4, 6, 7, 11, and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Abraham et al (hereinafter Abraham), U.S. Patent No. 4,799,061.

Regarding to claim 1, Abraham discloses a validation protocol for determining whether an untrusted authentication chip (figure 1, the card 10 having a processor (chip) 14) is valid, or not, including the steps of:

generating a random number in a trusted authentication chip (figure 1, the terminal 20 having a processor (chip) 24, column 3, lines 9-19, the random number is generated and encrypted at the terminal and transmitted to the card);

applying a keyed one way function to the random number using a key to produce an outcome, in both the trusted authentication chip and an untrusted authentication chip (column 3, lines 9-35, applying DES encryption algorithm (one way function) to encrypt the random number using the key K1 to produce the value X at the terminal, applying DES encryption algorithm to decrypt the random number using the key K2 to produce the value Y at the card);

comparing the outcomes produced in both the trusted and untrusted chips, and in the event of a match considering the untrusted chip to be valid (column 3, lines 35-44);

otherwise considering the untrusted chip to be invalid (column 3, lines 44-46).

Regarding to claim 2, Abraham discloses the key is kept secret (column 3, lines 4-8).

Regarding to claim 3, Abraham discloses the domain of the random numbers generated is non-deterministic (column 3, lines 9-13, the random numbers generated is non-deterministic because each challenge requires the user of a new random number).

Regarding to claim 4, Abraham discloses the keyed on-way function is a symmetric cryptograph, a random number sequence, or a message authentication code (column 3, lines 15-18, DES encryption algorithm is symmetric cryptograph).

Regarding to claim 6, Abraham discloses a validation system includes:  
a trusted authentication chip and an untrusted authentication chip (figure 1, the terminal 20 having a processor (chip) 24 and the card 10 having a processor (chip) 14);  
the trusted authentication chip includes a random number generator a keyed one-way function and a key for the function (column 3, lines 9-19, the terminal 20 generates the random number and encrypts it using the key K1, column 6, lines 24-27, means for generating random number);

the untrusted authentication chip includes the keyed one way function and the key (column 3, lines 18-23, the card 10 decrypts the value X using DES algorithm using the secret key K2);

a comparison means compares the outcomes produced in both the trusted and untrusted chips, and in the even of a match the untrusted chip is considered to be valid (column 6, lines 28-30, means for comparing).

Claims 7, 11, 12 have similar limitations found in claims 2, 4, 5, discussed above, therefore, are rejected by the same rationale.

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 5 and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abraham et al (hereinafter Abraham), U.S. Patent No. 4,799,061, in view of Thomlinson et al (herein after Thomlinson), U.S. Patent No. 5,778,069.

Regarding to claim 5, Abraham discloses the one-way function is a symmetric cryptographic function (column 3, lines 15-18, DES encryption algorithm is symmetric cryptograph and one way function), but Abraham does not teach the key has a minimum size of 128 bits. However, Thomlinson discloses the key has a minimum size of 128 bits (column 5, lines 59-65). Therefore, it would have been obvious to modify Abraham's to include the feature above for the security purpose because producing the encryption and decryption keys with larger bits makes the unauthorized person cannot easily to guess the keys.

Regarding to claims 8, 9, Abraham does not disclose the trusted authentication chip contains a random function to produce random numbers from a seed, and the function advances after every random number is produced so that the next random



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number will be produced from a new seed, and for a group of authentication chips, each chip has a different initial seed, so that the first call to each chip requesting a random number will produce different results for each chip in the group. However, Thomlinson discloses the trusted authentication chip contains a random function to produce random numbers from a seed, and the function advances after every random number is produced so that the next random number will be produced from a new seed (column 6, lines 36-60). Moreover, it is well known to use a different initial seed for each chip in the group of chip. Therefore, it would have been obvious to modify Abraham's to include the features above for the purpose of providing high security level because each random number is generated from a new seed and each chip has a different initial seed, thus the unauthorized person cannot easily to predict the random number.

Regarding to claim 10, Abraham discloses the domain of the random numbers generated is non-deterministic (column 3, lines 9-13, the random numbers generated is non-deterministic because each challenge requires the user of a new random number).

### ***Conclusion***

11. Claims 1-12 are rejected.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Nga B. Nguyen whose telephone number is (703) 306-2901. The examiner can normally be reached on Monday-Thursday from 9:00AM-6:00PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hyung S. Sough can be reached on (703) 308-0505.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 306-1113.

13. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

C/o Technology Center 3600

Washington, DC 20231

Or faxed to:

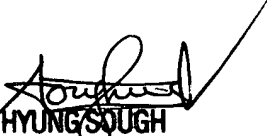
(703) 872-9326 (for formal communication intended for entry),

or

(703) 308-3691 (for informal or draft communication, please label "PROPOSED" or "DRAFT").

Hand-delivered responses should be brought to Crystal Park 5, 2451 Crystal Drive, Arlington, VA, Seventh Floor (Receptionist).

Nga B. Nguyen  
April 15, 2004

  
HYUNG SOUGH  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 3600